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ABSTRACT

The purpose of this study was to investigate the between self-regulated learning, personality, and achievement. The study investigated whether a relationship exists between personality and self-regulated learning, whether a relationship exists between achievement and self-regulated learning, and whether achievement moderates the relationship between personality and self-regulated learning. Subjects were 126 college students, approximately half of whom were remedial students. All subjects completed both the Myers-Briggs Type Indicator and the Motivated Strategies for Learning Questionnaire. Statistical measures, including multiple regression correlations, a series of moderated regressions, and a analysis of variance procedure were performed in analyzing the data. Significant relationships between self-regulated learning and personality found in 17 instances out of a possible 60 for the whole group of subjects. The multivariate test found no significant influence of achievement on self-regulated learning. When subjects scores were separated into the remedial and nonremedial groups, differing patterns emerged. The nonremedial group showed relationships in only 7 of the 60 possibilities, but the remedial group relationships in 15 of the 60 possibilities. The "JP" personality preference was the most powerful predictor of self-regulated learning for both remedial and no remedial groups. Although the relationships between personality and self-regulated learning were different in many factors between the no and remedial groups, the overall multivariate test showed no significance. Hence, achievement was not found to be a moderator of the relationships between personality and self-regulated learning. Results suggest, however, that relationships between the constructs exist and should be further (Contains 3 tables and 19 references.) (Author/SLD)

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A Study of Relationships Between Self-Regulated Learning, Personality, and Achievement

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A Study of Relationships Between Self-Regulated Learning, Personality, and Achievement

Abstract

The purpose of this study was to investigate the relationships between self-regulated learning, personality, and achievement. Specifically, the study investigated whether a relationship exists between personality and self-regulated learning, whether a relationship exists between achievement and self-regulated learning, and whether achievement moderates the relationship between personality and self-regulated learning.

Subjects were 126 college students, approximately half of whom were remedial students. All subjects completed both the Myers-Briggs Type Indicator and the Motivated Strategies for Learning Questionnaire. Statistical measures, including multiple regression correlations, a series of moderated regressions, and a MANOVA procedure were performed in analyzing the data.

Significant relationships between self-regulated learning and personality were found in 17 instances out of a possible 60 for the whole group of subjects. The multivariate test found no significant influence of achievement on self-regulated learning.

When subjects' scores were separated into the remedial and non-remedial groups, differing patterns emerged. The non-remedial group showed relationships in only seven of the 60 possibilities. The remedial group, however, showed relationships in 15 of the 60 possibilities. The JP personality preference was the most powerful predictor of self-regulated learning for both remedial and non-remedial groups. Although the relationships between personality and self-regulated learning were different in many factors between the non-remedial and remedial groups, the overall multivariate test showed no significance; hence, achievement was not found to be a moderator of the relationships between personality and self-regulated learning. Results suggested, however, that relationships between the constructs exist and should be further studied.

A Study of Relationships Between Self-Regulated Learning, Personality, and Achievement

Educators have long pondered differences in academic achievement. Students who are gifted according to measures of intelligence do not always produce superior academic performance. On the other end of the spectrum, sometimes students who do not score well on standardized measures of intelligence work far beyond their expected capacity. Such situations might be partially understood through the theory of learning that focuses on personally initiated strategies. While ability and environment are viewed by some learning theorists to be fixed entities, the idea that learning can be self-regulated raises interesting questions. What is meant by "self-regulated" learning (SRL)? Are there relationships between self-regulated learning and personality, between self-regulated learning and achievement, and, finally, are there differences between remedial and non-remedial students in terms of those relationships? This study takes into consideration these questions.

Self-regulated learning is a fairly new construct in research literature, and it covers a wide variety of behaviors. Self-regulated learners seek to control their own learning behavior, motivation, emotions, and cognition. They self-monitor and self-correct as they move toward their learning goals. Metacognitive, motivational, behavioral, and environmental processes are all involved in self-regulated learning (Zimmerman & Risemberg, 1997). Self-regulated learning is often thought of in terms of unique processing routines and knowledge structures shaped by social interaction and culture (Matthews, et al., 2000). As such, it is viewed as malleable—as a construct encompassing skills and behaviors that can be changed. Courses focusing on study skills and learning strategies are often based on the premise that self-regulated learning can be taught and learned.

Personality and psychological type, on the other hand, are generally viewed as encompassing traits that are thought to relate to stable individual differences that remain fixed across time and different situations (Matthews, et al., 2000). Some theorists have resisted considering possible links between self-regulated learning and personality because of the apparent conflict between stable and unstable characteristics (Pintrich, 1995).

Matthews et al. (2000, p. 171) declare, in fact, that "integration of research on personality traits and self-regulation requires a resolution of two conflicting world views." These researchers seek to resolve that conflict through a recently-published synthesis in which stable cognitive knowledge structures are seen as "both a basis for personality traits and as an important influence on context-bound self-regulative cognitions" (Matthews et al., 2000, p. 171). These researchers conclude that styles of self-regulation are an integral aspect of personality, and they suggest that the "structuring of self-knowledge reflects the structure of the adaptive challenges laid down by the environment" (Matthews et al., 2000, p. 201).

Matthews et al. (2000, p. 176) state that "the personality trait construct appears superficially to be antagonistic to the fluid, dynamic nature of self-regulative processing." They then emphasize, however, that broad traits do, in fact, relate to self-regulation, that certain self-regulative traits are "nomothetic constructs that predict individual differences in self-regulative behavior," and that the role of self-knowledge in maintaining the stability of personality traits has been neglected (Matthews et al., 2000, p. 176). Matthews (1997, 1999) asserts that self-knowledge plays an important role in choice of environments and adaptive goals and that self-beliefs foster acquisition of skills required for adaptive specialization.

Given the importance of self-knowledge in the synthesized model proposed by Wells and Matthews (1994, 1996), the process of understanding one's personality preferences would seem

to be a valuable endeavor. One tool for identifying personality preferences is the Myers-Briggs Type Indicator (MBTI). This instrument, based on the work of Carl Jung, was developed by Isabel Myers and Katharine Briggs for the purpose of making Jung's type theory more accessible to the general population (Myers, 1980). Not only does Jungian theory hold that each person has natural strengths that can be maximized as the individual pursues his or her own path toward excellence, but the theory also promotes understanding of possible weaknesses that can result as one operates from his or her natural preferences. Further, good type development holds that a person can learn to develop skills for the less-preferred dimensions—skills that will help one to compensate for the possible weaknesses that are likely to be found in each of the different psychological types (Bayne, 1997). Thus, incorporating type theory into the synthesized view presented by Matthews et al. (2000) might introduce the optimistic element of a possible vehicle for changing self-beliefs that negatively influence desired self-regulation.

Statement of the Problem

Self-regulated learning skills often differentiate effective from ineffective learners. As teachers attempt to help students improve their self-regulatory abilities, success varies. Efforts might be enhanced by taking into account personality preferences and psychological type if, in fact, relationships are found to exist between the constructs. In addition to teachers' individual work with students, courses have been constructed focusing on self-regulated learning with names such as "Learning to Learn," "College Success," or "Improving Study Skills". Such courses have met with varying degrees of success. Again, an important missing element might be a consideration of personality or temperament preferences. Specifically, a need exists to investigate the following questions:

(1) Is there a relationship between personality and self-regulated learning?

(2) Is there a relationship between achievement (group assignment) and self-regulated learning?

(2) Is the relationship between personality and self-regulated learning moderated by achievement?

The purpose of this correlational study is to investigate possible relationships between personality and self-regulatory skills. Investigating such relationships could yield information that might add to the body of knowledge in the fields of learning theory and type theory. Possible insight might be developed as to why some learners initiate certain strategies and others do not, why learners prefer some strategies over others, why some students are much more adept at regulating their own learning than are others, and how students might be helped to develop skills for their less-preferred personality dimensions if those dimensions are found to be related to self-regulated learning.

A major reason for attempting to understand the nature of self-regulated learning and its determinants is the belief that more thorough insight into its nature might stimulate thinking about "ways to promote more adaptive self-regulatory aptitudes, practices, and interventions" (Zeidner, et al. 2000, p. 766). Zeidner et al. declare that there is a need for studies that set out to unravel how individuals become efficient self-regulators.

Pintrich (2000) points out the need to research the role of personal characteristics in moderating the relations between self-regulation and goals. Although earlier stating that self-regulated learning is not a personality style or trait that the individual has no control over, as suggested by the Myers-Briggs typology (Pintrich, 1995), more recently Pintrich has theorized that "personality characteristics such as general temperament or emotionality may create a context where the relations between goals and regulation are modulated or exacerbated"

(Pintrich, 2000, p. 492). "We need to find ways to integrate research on individual differences with research on the development of self-regulatory components," declare Zeidner et al. (2000, p. 764), as they point out that the assessment of individual differences in self-regulation is an area that has been inadequately investigated.

Caffarella and O'Donnell (1988, p. 55) investigated self-directed learning, which is quite similar conceptually to self-regulated learning, and concluded that "the most promising idea seems to be conceptualizing self-directed learning as a personality construct versus a mode of instruction." They suggest exploring this idea quantitatively using quasi-experimental methods. Eisenman (1989) also suggested that self-directed learning should be studied in terms of personality. Such a coupling might provide the foundation for a comprehensive theory, according to Oddi (1987). Zeidner et al. (2000, p. 755) point to the need for "mapping out the pattern of relationships between self-regulation and related individual difference constructs."

Focusing specifically on connections between self-regulated learning and personality with regard to both remedial and non-remedial students has not been previously undertaken. While most work in the field of self-regulated learning has occurred within the last fifteen years, it is now the subject of intense professional interest and scrutiny (Zeidner, 2000). Looking at these constructs from a new perspective might prompt the development of a new frame of reference with implications for teaching and learning.

Research Methods and Project Data

This study involved two independent variables, personality and achievement, and one dependent variable, self-regulated learning. Personality was measured by the Myers-Briggs Type Indicator, which identifies preferences for functioning in the following four basic

temperament dimensions: Extraversion/Introversion, Sensing/Intuition, Thinking/Feeling, and Judging/Perceiving. These four dimensions served as the first independent variable in this study. The second independent variable, achievement, was determined by subjects' placement into developmental classes. Subjects were separated as follows: (a) Group 1 - remedial college students (basic studies classes) and (b) Group 2 - non-remedial college students (regular classes).

The dependent variable, self-regulated learning, was comprised of 15 sub-sections, each of which represented one of the 15 factors measured by the Motivated Strategies for Learning Questionnaire. The study, therefore, investigated each factor as a separate dependent variable in its possible relationship to personality and achievement. These 15 factors include the following: Intrinsic Goal Orientation, Extrinsic Goal Orientation, Task Value, Control of Learning Beliefs, Self-Efficacy for Learning and Performance, Rehearsal, Elaboration, Organization, Critical Thinking, Metacognitive Self-Regulation, Test Anxiety, Time and Study Environment, Effort Regulation, Peer Learning, and Help Seeking. These 15 factors served as the dependent variable.

In order to answer the first question, 15 multiple regression correlations were performed, one for each MSLQ factor with the four MBTI dimensions. Correlation coefficients were obtained for each of the 15 factors indicating their relationships with each of the four personality dimensions.

The second question was addressed by performing a MANOVA as an overall multivariate test in order to examine relationships between achievement (group assignment) and self-regulated learning.

The third question was examined by performing 15 additional multiple regression correlations with the subject file split into two groups on the basis of achievement (remedial and non-remedial) in order to look for differences in the personality-SRL relationships. In addition, a

series of 15 moderated regression analyses examined the effect of achievement on the relationships between personality and self-regulated learning.

Three one-way ANOVA procedures were performed in order to examine possible relationships between the demographic factors of Gender, Ethnicity, and Age and self-regulated learning. This information was necessary in order to understand and describe the sample population more fully and also in order to determine whether demographic factors might be considered as possible confounding influences.

The participants in this study were 126 freshmen and sophomore level students currently attending a four-year state university in the southeastern United States. The accessible population comprised seven intact classes. Five of the classes were made up of remedial students (Basic Studies), and two were comprised of non-remedial students (those in regular university classes). Although randomization was not possible, classes were chosen in which enrollment represented a large cross-section of students. Students, therefore, would not be expected to differ from the larger student population in any systematic way. The students were given the choice of participating or electing not to participate. Each subject completed both instruments during one 50-minute class period and used a code of their choosing in order to assure anonymity.

Group 1 was made up of the 61 remedial students, who were enrolled in either Developmental Reading or Math. The 65 non-remedial students, who comprised Group 2, were enrolled in either Theater Appreciation or History of World Civilizations, both of which are core classes.

Males made up 31% of the total sample and 27.9% of the remedial group. Females, therefore, were slightly over-represented in the remedial group. African-Americans made up

29.3% of the total sample but comprised 42.6% of the remedial group. Other ethnic groups were under-represented in the remedial classes. Comparison of the two groups by subjects' ages indicates a fairly even representation between the remedial and non-remedial classes for each of the age groups. Those over the age of 40, however, were more likely to be in the remedial group.

Students in the remedial group were assigned by the university to Basic Studies classes because of deficits in SAT scores. Students applying to the university are assigned to Basic Studies if SAT scores are below 400 verbal and 430 math. They must satisfactorily complete Basic Studies classes before being admitted to regular university classes. We can expect the remedial subjects in this study not to differ in any systematic way from the larger population of Basic Studies (remedial) students, but again, they were not chosen by random means. The findings from this study, therefore, must be limited to this population sample.

Assessment of Data

Question 1: To see if personality dimensions of E/I, S/N, T/F, or J/P could be used to predict self-regulated learning factors, each factor was examined in relationship to personality. Table 1 shows correlation coefficients between each of the 15 MSLQ factors and each of the four MBTI personality dimensions. No significant relationships with personality were found for the following five factors: Intrinsic Goal Orientation, Extrinsic Goal Orientation, Control of Learning Beliefs, Test Anxiety, and Peer Learning. The other ten MSLQ factors were found to have statistically significant relationships with one or more of the personality dimensions.

Insert Table 1 about here

A summary of the data relating to the first question reveals 17 statistically significant relationships between personality dimensions and self-regulated learning factors. With a total of 60 relationships possible, the number of 17 represents 28% of the total possible. Especially the JP dimension, and to a slightly lesser degree, the SN dimension seem to be related to self-regulated learning. These dimensions showed eight and six relationships respectively with the 15 factors of SRL. The EI dimension showed only one relationship, and the TF dimension indicated two relationships.

Question 2: In order to determine whether self-regulated learning factors varied according to achievement (remedial or non-remedial), a MANOVA was performed as an overall multivariate test. The overall multivariate test resulted in a Hotelling's T^2 of .220, which was not statistically significant at the .05 level.

Question 3: In order to see whether a difference exists between remedial and non-remedial students in terms of personality and SRL relationships, each SRL factor was examined as related to personality with the subject file split into Group 1, remedial students, and Group 2, non-remedial students. Table 2 summarizes the findings for Group 1, and Table 3 summarizes results for Group 2. Differences were noted in the following factors: Extrinsic Goal Orientation, Task Value, Control of Learning Beliefs, Rehearsal, Elaboration, Organization, Critical Thinking, Effort Regulation, and Help Seeking.

Insert Table 2 about here

Insert Table 3 about here

A summary of the data relating to the third question reveals 14 differences in terms of significant relationships between the remedial and non-remedial groups of students. With a total of 60 possible differences in relationship, the number of 14 represents 23% of the total possible. Of these 14 differences, 11 of them were in the same direction; that is, a significant relationship was indicated for remedial students (Group 1) but not for the non-remedial students (Group 2). Seven of these differences in relationship centered around the JP dimension. Three of the differences involved the EI dimension, and only one focused on the SN dimension. No differences in relationship were noted involving the TF dimension. In order to examine statistically the potential moderating effect of achievement on the relationship between personality and self-regulated learning, a series was performed of 15 moderated regression analyses. For each analysis, the change in R^2 due to the moderated effect of achievement was non-significant ($p>.05$).

Statistical procedures included 15 multiple regression analyses, both with and without the subject file split, a MANOVA procedure, and a series of 15 moderated regression analyses. Relationships were noted between self-regulated learning and personality dimensions. Statistically significant relationships were not observed between SRL and achievement as defined by assignment to the remedial or non-remedial group. Differences in the SRL-personality relationships were observed between the remedial and non-remedial groups, however. In spite of these differences, achievement, as defined in this study, was not found to be a significant moderating factor in the relationships between self-regulated learning and personality although more significant relationships existed for the remedial group. Especially with regard to the Judging/Perceiving dimension, remedial students showed more relationships

between personality and self-regulated learning. The J/P dimension was the most important predictor variable for self-regulated learning.

Findings

With respect to the first research question, which asks whether there is a relationship between personality and self-regulated learning, results of this study suggest that 17 significant relationships exist and that the most important predictor variable for self-regulated learning was found to be the Judging/Perceiving personality dimension. The very definition of the J/P preference offers clues as to why this area is so strongly related. A preference for J indicates that one prefers to come to a judgment (using either thinking or feeling) instead of continuing to gather data (using either sensing or intuition) (McCaulley, 1981). The person who prefers to live mainly in the dimension of Judging prefers a decisive, planned, and orderly way of life and aims to regulate and control events (McCaulley, 1981). These words sound synonymous with "self-regulated." The individual, on the other hand, who prefers Perceiving chooses a spontaneous, flexible way, aiming to understand life and adapt to it (McCaulley, 1981).

The volitional strategies that drive self-regulation (Kuhl, 1984) include Information-processing control, also referred to as "parsimony of information processing." The description of this SRL-related ability sounds as if it might have a definite connection to the J personality preference. This particular skill refers to the student's ability to recognize that sufficient information has been processed to permit one to take action instead of continuing to process. The classic difference between a J and a P is the preference for coming to closure (for the J) vs. the preference for continuing to gather data (for the P). Focusing on this skill in light of the J/P dimension could yield useful insights.

Students who prefer Judging find self-regulation more natural, but it is important for teachers to help students understand that neither J nor P is a better orientation to life than the other. This preference simply differentiates between the Judging people, who run their lives, and the Perceiving people, who just live them. Both orientations have their merits, according to Myers, who declares that either can make a satisfying way of life, if one is able to switch over temporarily to the opposite attitude when he really needs it" (Myers, 1980, p. 58). That ability to switch temporarily is needed by both J's and P's. The J often needs skills for flexibility and adaptability, and the P needs to switch temporarily in order to develop some of the self-regulatory skills so strongly related to the J preference.

Perceiving students might increase self-regulatory skills by understanding their natural preferences and how those preferences could interfere with their learning goals. Skills might be further enhanced as P students develop strategies for switching temporarily to their less-preferred Judging orientation in specific learning tasks. Because the J/P preference results from simply an individual's choice as to which process governs his or her life, students can learn that they can depart from that choice temporarily when such a departure is necessary for reaching a learning goal. Perhaps as students learn that such temporary departures can occur as often as necessary without infringing upon the basic life-style preference, they will be more willing to use skills associated with the less-preferred dimension when necessary.

The second research question dealt with whether a relationship exists between achievement (as defined by membership in the remedial or regular group) and self-regulated learning. It is important to consider that a different definition of achievement other than that used in this study might have yielded different results. The remedial subjects in this study, who

comprised the low achievement group, had been assigned to Basic Studies classes, which are courses that must be successfully completed before admission to regular university classes. These students had accepted that assignment instead of pursuing an easier course such as dropping out. Such a situation might have resulted in a remedial group with higher motivation and self-regulatory efforts than would be the case in, for example, public school remedial students or adults with low academic achievement not engaged in such self-development efforts. In addition, some of the students in the remedial group had participated in a one-semester-hour class entitled "College Success," which included some study skills instruction. Time management tips, different learning styles, and managing the study environment are topics discussed in the class, and such instruction might have affected self-regulated learning scores. Thus, the definition of achievement used in this study and the experience of the remedial students should be kept in mind when considering the finding of no significant difference between the two groups in terms of self-regulated learning skills.

The third research question asked whether the relationship between personality and self-regulated learning is moderated by achievement. A particularly interesting finding of this study was that personality was a stronger predictor for remedial than for non-remedial students. If this is, in fact, the case, perhaps the non-remedial students have developed and already employ skills for their less preferred personality dimensions in learning situations. This finding suggests a fascinating avenue for further research.

Demographic factors showed some significant relationships to self-regulated learning factors. The only relationship between ethnicity and SRL was for the factor of Self-Efficacy for Learning and Performance. African-Americans scored higher on this factor than any of the other racial groups, $p=.01$. The group scoring next highest was Hispanics, then Asians, and the lowest

scoring group was the Other group preceded by Caucasians. Interestingly, African-Americans were over-represented in the remedial group. While this racial group comprised only 29.3% of the total sample, they made up 42.6% of the remedial group. Being classified as a remedial student indicates inadequate academic performance, a situation that seems inconsistent with high Self-Efficacy for Learning and Performance. This finding is consistent with findings in a landmark study by Pintrich and DeGroot (1990), which determined that high self-efficacy is not sufficient for successful academic performance. These researchers found that while positive expectancy beliefs seemed to play a facilitative role, it was specifically self-regulation that seemed to be more directly implicated in performance and that motivational beliefs and strategies without self-regulation were inadequate to promote academic success.

The demographic factor of age was significantly related to the factors of Intrinsic Goal Orientation, Task Value, Organization, Metacognitive Self-Regulation, Time and Study Environment, and Effort Regulation. In general, the older students scored significantly higher on all of these factors. Scores for the five age groups (from under 20 years old to over 50 years) rose steadily across the age groups, with the exception of three that showed a dip in the scores for subjects in their forties. Older students have obviously made conscious decisions and often concerted effort to return to college. It is not surprising, therefore, that higher scores would result in many of these factors although an earlier study (Wilson, 1992) found no relationship between chronological age and self-directed learning readiness.

Conclusions

The following conclusions are supported by data from the present study:

1. Relationships exist between self-regulated learning and personality dimensions.

2. Some of the relationships between personality and self-regulated learning differ for remedial and non-remedial students, but achievement as defined in this study does not moderate relationships between SRL and personality.

3. The pattern of relationships suggests that personality is a stronger predictor of SRL for remedial than for non-remedial students.

4. The Judging-Perceiving personality dimension is an important predictor variable for self-regulated learning. Not only was the J/P dimension the variable likely to be significantly correlated with SRL factors, it was also the personality dimension most likely to be significantly related to SRL for remedial, but not for non-remedial, students.

5. Demographic factors show some relationships with self-regulated learning dimensions.

Recommendations

The following recommendations for future study are based on the findings and conclusions of this study:

1. An interesting line of research would be to investigate why personality is a stronger predictor of SRL for remedial students than for regular students. Do the more successful students employ measures that inhibit their natural personality preferences in order to accomplish specific learning goals? If so, what, when, and how such measures are implemented would be useful information.

2. The Judging-Perceiving dimension and its relation to self-regulated learning should be further investigated to determine why the JP relationship with SRL was especially dominant for remedial students.

3. Any of the SRL skills where relationships were indicated could be researched

in depth to discover exactly what features of that skill relate to the specific personality dimension with which it is associated.

4. Another promising line of research might relate to the value of self-knowledge. Researchers might investigate whether knowing one's personality preferences and MBTI type could assist in developing strategic learning skills, or, on the contrary, whether such knowledge would be likely simply to provide the student an excuse for not having developed certain skills, thereby making him/her more resistant to self-development.

5. Investigating possible relationships between the SRL skills and additional components of psychological type theory might yield added insight. A larger pool of subjects, for example, could be used to determine which of the 16 MBTI types tend to prefer specific SRL factors.

6. Future research should also investigate the demographic implications. Some questions that might be addressed are:

(a) Why do African-American students score high on Self-Efficacy for Learning and Performance but find themselves over-represented in the remedial group?

(b) What can older students teach us about self-regulatory abilities?

The following recommendations are made regarding how the study could be used by those who teach and advise students and by those who design pre-service teacher training and/or staff development for teachers:

1. Counselors and teachers should understand the possible relationship between self-regulated learning and personality. They should help students understand that skills can and must be developed for the individual's less preferred personality dimensions. A thorough understanding of Myers-Briggs typology suggests that while preferences are probably innate and stable, they can be superseded by the individual when he or she realizes it is necessary to do.

From that vantage point, students can be assisted in choosing ways to compensate for their own preferences that interfere with specific self-regulated learning skills. Actually administering the MBTI and the MSLQ for students early in a study skills course could provide the foundation for such understanding and might help prevent defensiveness that students sometimes experience with regard to their strengths and weaknesses in learning skills. Developmental advising and pre-service teacher preparation are other areas that might find useful applications for the idea that personality preferences, which are likely to be innate and resistant to change, might be accurate predictors of certain self-regulatory skills. With such an understanding, teachers could begin to develop a repertoire of strategies for helping students realize when and how to compensate for their natural preferences that might interfere with learning skills. Especially instructors of remedial students should be encouraged to understand and emphasize the possible links between personality and self-regulated learning and ways students might supersede natural tendencies when those tendencies interfere with academic performance.

Connections between SRL and personality are worth exploring in greater depth. Evidence from this study suggests that relationships between the constructs exist. If enhanced self-understanding can assist individuals in making positive behavioral changes, a knowledge of type theory might help all students (and perhaps especially remedial students) to understand how their natural preferences need to be approached as they work to achieve higher levels of self-regulated learning.

Perhaps it is time to move beyond the reluctance expressed by theorists to connect SRL with MBTI typology (Pintrich, 1995) and realize that if such a connection does, in fact, exist, understanding that relationship can lead to growth. If constructs are directly related, or are related to some common underlying factors, theorists should not deny the relationships but

should pursue a thorough understanding so that ultimately students can benefit. A synthesis of SRL theory and type theory might help those students who seem to resist strategies taught in their study skills classes. Perhaps such understanding has been a missing piece of the motivational puzzle as educators seek to help students acquire the skills necessary to regulate their own learning and the will to put those skills to effective use.

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Table 1

Data analysis for MBTI personality dimensions associated with MSLQ self-regulated learning factors

	Correlations – All Subjects (Whole Group)			
MSLQ Factors	EI	SN	TF	JP
Intrinsic Goal Orientation	.059	.021	-.080	-.068
Extrinsic Goal Orientation	.045	.021	-.022	.022
Task Value	.014	-.091	-.127	-.235**
Control of Learning Beliefs	-.147	.138	.029	.037
Self-Efficacy for Learning	-.076	-.025	-.278**	-.013
Rehearsal	-.123	-.153*	.023	-.268**
Elaboration	-.128	-.108	-.168*	-.231**
Organization	-.048	-.214**	-.117	-.332***
Critical Thinking	-.184*	.197*	-.096	.010
Metacognitive Self-Regulation	-.117	-.077	-.135	-.249**
Test Anxiety	.029	-.029	-.088	-.022
Time and Study Environment	.014	-.281**	-.034	-.478***
Effort Regulation	.074	-.189*	-.072	-.270**
Peer Learning	-.107	-.044	.036	-.141
Help Seeking	-.134	-.179*	-.025	-.194*

* $p<.05$
** $p<.01$
*** $p<.001$

Table 2

Data analysis for MBTI personality dimensions associated with MSLQ self-regulated learning factors for Group 1

MSLQ Factors	Correlations - Group 1 (Remedial Students) EI	SN	TF	JP
Intrinsic Goal Orientation	.086	.070	-.038	-.150
Extrinsic Goal Orientation	-.105	.160	.031	.266*
Task Value	.036	-.043	-.193	-.368**
Control of Learning Beliefs	-.256*	.080	.022	-.023
Self-Efficacy for Learning	-.062	-.038	-.335**	-.186
Rehearsal	-.255*	-.042	.057	-.323**
Elaboration	-.172	-.166	-.194	-.383**
Organization	-.102	-.201	-.162	-.457***
Critical Thinking	-.221*	.071	-.016	-.123
Metacognitive Self-Regulation	-.174	-.049	-.191	-.263*
Test Anxiety	-.019	.052	-.051	.034
Time and Study Environment	.061	-.309**	-.156	-.592***
Effort Regulation	.033	-.230*	-.178	-.347**
Peer Learning	-.102	.107	.179	-.142
Help Seeking	-.158	-.070	.094	-.271*

* $p<.05$
** $p<.01$
*** $p<.001$

Table 3

Data analysis for MBTI personality dimensions associated with MSLQ self-regulated learning factors

	Correlations - Group 2 (Non-Remedial Students)			
MSLQ Factors	EI	SN	TF	JP
Intrinsic Goal Orientation	.046	.046	-.087	.030
Extrinsic Goal Orientation	.175	-.051	-.049	-.136
Task Value	.007	-.054	.051	-.105
Control of Learning Beliefs	-.055	.193	.036	.085
Self-Efficacy for Learning	-.081	.046	-.220*	.141
Rehearsal	.016	-.221*	.017	-.202
Elaboration	-.091	-.104	-.170	-.133
Organization	.016	-.199	-.055	-.204
Critical Thinking	-.154	.294**	-.175	.103
Metacognitive Self-Reg.	-.057	-.075	-.075	-.229*
Test Anxiety	.067	-.098	-.120	-.069
Time/ Study Environment	-.028	-.253*	.085	-.388**
Effort Regulation	.124	-.085	.050	-.167
Peer Learning	-.114	-.181	-.097	-.139
Help Seeking	-.104	-.230*	-.107	-.092

* p<.05
** p<.01
*** p<.001

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